

**Amendments to the Claims**

The following listing of claims will replace all prior versions and listings of the claims in the application:

Claims 1-8 (canceled).

Claim 9 (new): A method of precoding an orthogonal frequency division multiplexing (OFDM) system, comprising:

inserting one or more zeros between at least two sets of consecutive information symbols of the OFDM system;

expanding a data rate of the OFDM system due to the insertion of zeros; and

removing spectral nulls of an intersymbol interference (ISI) channel of the OFDM system due to expansion of the data rate of the OFDM system.

Claim 10 (new): A method of precoding an OFDM system as recited in claim 1, wherein the OFDM system is precoded independent of the ISI channel.

Claim 11 (new): A method of precoding an OFDM system as recited in claim 1, wherein the inserting of one or more zeros comprises utilizing a precoder ( $G(z)$ ), where  $G(z) = \begin{bmatrix} I_{K \times K} \\ 0_{(M-K) \times K} \end{bmatrix}$ ,  $M$  and  $K$  are vector sizes,  $I_{K \times K}$  is the  $K \times K$  identity matrix, and  $0_{(M-K) \times K}$  is the  $(M-K) \times K$  all zeros matrix.

Claim 12 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ( $G(z)$ ) inserts  $M-K$  zeros between at least two sets of  $K$  consecutive information symbols of

the OFDM system.

Claim 13 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ( $G(z)$ ) is independent of the ISI channel.

Claim 14 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ( $G(z)$ ) maintains the energy of a signal of the OFDM system.

Claim 15 (new): A method of precoding an OFDM system as recited in claim 11, wherein  $M > K$ .

Claim 16 (new): A method of reducing a data rate overhead ( $\frac{(N + L)}{N}$ ) of an orthogonal frequency division multiplexing (OFDM) system, where  $N$  are the number of carriers in the OFDM system and  $L$  are intersymbol interference (ISI) channel lengths of the OFDM system, the method comprising:

providing a precoder ( $G(z)$ ), where  $G(z) = I_{K \times K}$ ,  $K$  is a vector size, and  $I_{K \times K}$  is the  $K \times K$  identity matrix; and

squaring the identity matrix ( $I_{K \times K}$ ) of the precoder ( $G(z)$ ) to group input data of the OFDM system into  $K \times 1$  vectors, maintain the data rate of the OFDM system, and reduce the data rate overhead ( $\frac{(N + L)}{N}$ ) of the OFDM system.

Claim 17 (new): A method of reducing a data rate overhead of an OFDM system, wherein the method reduces the data rate overhead of the OFDM system  $K$  times.

Claim 18 (new): A method of reducing a data rate overhead of an OFDM system, wherein the squaring of the identity matrix ( $I_{K \times K}$ ) further removes spectral nulls from the ISI channel.